



## Statewide Lane Reconfiguration Screening

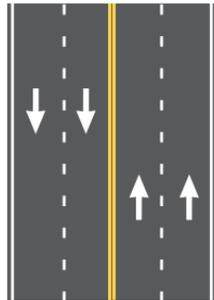
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Photo Credit: Keith Knapp



## What is a Reconfiguration

**Before**



**After**

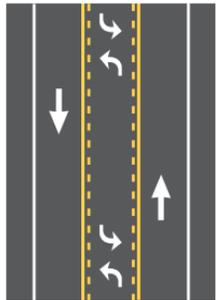


Photo Credit: Paul LaFleur FHWA

## What do others look like?

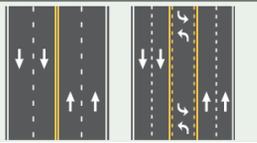
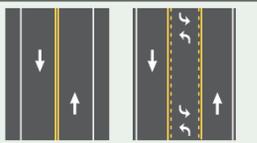
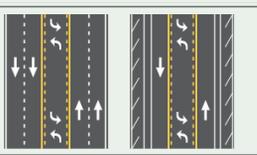
<p><b>4-lane to 5-lane:</b> In some cases it is necessary to keep two lanes in each direction for capacity purposes. Narrowing lane width to provide a TWLTL introduces the benefits of separating turning vehicles and reducing operating speeds.</p>	
<p><b>2-lane to 3-lane:</b> If a capacity expansion of an existing two-lane road is desired, in some cases a three-lane cross section can provide similar operational benefits to a four-lane cross section while maintaining the safety benefits of the three-lane configuration.</p>	
<p><b>5-lane to 3-lane:</b> In some cases jurisdictions have reconfigured five-lane sections to three lanes, adding features such as diagonal parking and protected bicycle lanes with the extra cross section width.</p>	

Photo Credit: Paul LaFleur FHWA

## Why consider a reconfiguration?

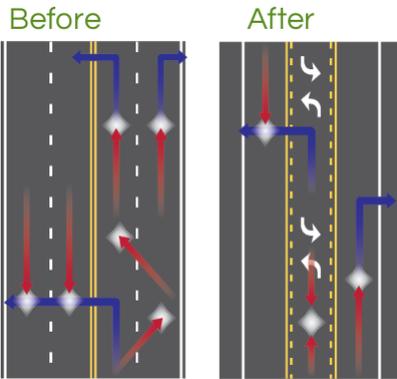


Photo Credit: Paul LaFleur FHWA

## Statewide Screening for Lane Reconfiguration

### Background of Project

- Peer exchange opportunity
- Current applications coming online
- Opportunities to implement
  - Intuition
  - Data driven



*Photo Credit: Jennifer Atkinson and Paul LaFleur FHWA*

## Feasibility of Study

### Factors for determining feasibility

- Roadway function and environment
- Overall traffic volume and level of service
- Turn volumes and patterns
- Frequent-stop and/or slow-moving vehicles
- Weaving, speed, and queues
- Crash types and patterns
- Pedestrian and bike activity
- Right-of-way availability, cost and acquisition impacts
- General characteristics: parallel roadways, offset minor street intersections, parking, corner radii, and at-grade railroad crossings

## Limitations of Screening

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- Data
  - Only as good as what is available
- Scope
  - Entire state limits granularity of analysis
- Time



## Analysis Structure

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### Data Elements

- Network screening elements
  - Roadway data elements
    - Number of lanes
    - Median type
    - AADT
    - Major and minor intersections
    - Business and private entrances
  - Additional data elements
    - Signalized intersections
    - Segment level crash data



# Phasing of Analysis

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## First Phase: Querying of Data

- High level screening
  - All segments including
    - 4 lanes
    - No median
    - Two way
  - Varying lengths included
  - AADT
    - Further restricted= $<18,000$

# Phasing of Analysis

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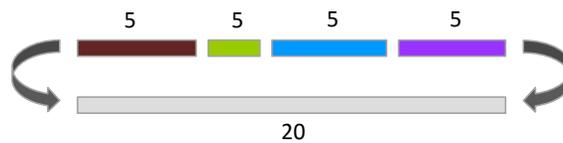
## Second Phase: Filtering and Calculations

- Geoprocessing and filtering
  - Intersection Analysis
    - Intersection database
      - Buffer analysis to determine high concentrations of signalized intersections
  - Access Density
    - Calculated field within ArcGIS
    - Per mile basis

## Phasing of Analysis

### Third Phase: Geoprocessing and Aggregation

- Site Aggregation
  - Dissolving feature within ArcGIS
    - Focused on sites .5 miles or longer
  - Manual Aggregation
    - Disconnected but continuous sites
- Crash Data
  - Segment level crash data
    - Select by identified locations
    - Aggregate up to corridor potential candidates



## Phasing of Analysis

### Fourth Phase: Identification of Existing Three-Lane Configurations

- Secondary Screening
  - Change of query to identify three-lane configurations-(TWLTL)
  - Repeated Phases 1-3
- Initial identification was supplemented by two sources
  - Internal spreadsheet of known locations
  - "Iowa's Experience with Road Diet Measures: Use of Bayesian Approach to Assess Impacts on Crash Frequencies and Crash Rates"-Michael Pawlovich

## Phasing of Analysis

### Fifth Phase: Quality Control

- Nothing is perfect
  - Data
  - Visual inspection of each potential candidate and existing three-lane sites
    - Aerial and street view photos
    - This phase resulted in re-aggregation of some selected sites.



## Candidate Locations in Des Moines Metro

1	DES MOINES	DMAMPO	E GRAND AVE	E 5TH ST	E 18TH ST	12,400	1.28	34	YES	1,439
1	DES MOINES	DMAMPO	E 30TH ST	.15 MILES S OF DEAN AVE	STATE AVE	12,800	0.83	25	YES	1,131
1	DES MOINES	DMAMPO	FOREST AVE	BEAVER AVE	19TH ST	14,100	1.11	28	YES	1,204
1	DES MOINES	DMAMPO	HUBBELL AVE/ US 6	E 38TH ST	.15 MILES E OF NE 46TH ST	14,400	1.45	27	YES	495
1	DES MOINES	DMAMPO	E EUCLID AVE/ US 6	1ST ST	E 13TH ST	14,500	0.81	49	YES	1,001
1	DES MOINES	DMAMPO	HICKMAN RD	30TH ST	PROSPECT RD	14,500	1.45	44	YES	830
1	DES MOINES	DMAMPO	UNIVERSITY AVE	24TH ST	7TH ST	15,600	1.18	33	YES	1,102
1	DES MOINES	DMAMPO	SW 9TH ST	LALLY ST	SW MCKINLEY AVE	15,700	0.87	57	YES	494
1	DES MOINES	DMAMPO	DOUGLAS AVE/ US 6	MERLE HAY RD	LOWER BEAVER RD	16,500	1.79	113	YES	687
1	DES MOINES	DMAMPO	ASHWORTH RD	.1 MILES E OF 72ND ST	63RD ST	16,700	5.23	44	YES	292
1	DES MOINES	DMAMPO	E 14TH ST/ US 69	GARFIELD AVE	ALPHA AVE	17,100	0.85	121	YES	689
1	DES MOINES	DMAMPO	GRAND AVE	.15 MILES N OF FULLER RD	18TH ST	17,200	5.83	50	YES	367
1	DES MOINES	DMAMPO	INDIANOLA AVE	SE 9TH ST	HILLSIDE AVE	17,300	1.19	58	YES	340
1	DES MOINES	DMAMPO	EUCLID AVE/ US 6	.1 MILES W OF 16TH ST	6TH AVE	18,700	0.87	74	YES	701
1	DES MOINES	DMAMPO	2ND AVE/ IOWA 415	INDIANA AVE	NW 43RD AVE	19,500	2.60	62	YES	622
1	JOHNSTON	DMAMPO	NW 86TH ST	.1 MILES N OF NW 62ND AVE	NW 70TH AVE	5,400	0.86	4	NO	162
1	JOHNSTON	DMAMPO	MERLE HAY RD	NW 63RD PL	NW 70TH AVE	12,800	0.90	30	YES	123
1	URBANDALE	DMAMPO	70TH ST	PALM DR	MEREDITH DR	9,600	1.37	79	YES	442
1	URBANDALE	DMAMPO	MEREDITH DR	84TH ST	59TH ST	14,300	1.82	15	YES	276
1	WEST DES MOINES	DMAMPO	E P TRUE PKWY	60TH ST	GRAND AVE	16,200	3.21	7	YES	258

*\*District field: Red indicates that the site is at least partially located on a state route whereas grey indicates that the site is located exclusively on a municipal or county route.*

